

DISTRICT DEPARTMENT OF THE ENVIRONMENT

NOTICE OF PROPOSED RULEMAKING

District of Columbia Water Quality Standards

The Director of the District Department of the Environment (DDOE), in accordance with the authority set forth in the District Department of the Environment Establishment Act of 2005, effective February 15, 2006 (D.C. Law 16-51; D.C. Official Code § 8-151.01 *et seq.*), sections 5 and 21 of the Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code §§ 8-103.04 and 8-103.20), and Mayor's Order 2006-61, dated June 14, 2006, hereby gives notice of proposed rulemaking action to amend Chapter 11 Water Quality Standards of Title 21 of the District of Columbia Municipal Regulations (DCMR).

Summary of the proposed changes:

DDOE is conducting its Triennial Review of the District of Columbia's Water Quality Standards as required by section 303(c) of the Federal Clean Water Act (CWA) (33 U.S.C. § 1313 (c)) and the District's Water Pollution Control Act of 1984. It is DDOE's goal to continue to update and make available the latest scientific findings in the ambient water quality criteria that are used to restore and protect the quality of District waters.

DDOE is revising the aquatic life numeric criteria for Acrolein from 10.0 µg/L to 3.0 µg/L, a more stringent criteria (§ 1104.8, Table 3). This change was based on EPA toxicity data and other information on the effects of Acrolein that were obtained from EPA's internal and external peer review, including scientific input from the public. The revised criteria will protect most aquatic species from adverse effects due to Acrolein exposure. Acrolein is used as biocide and herbicide to control algae, aquatic weeds and mollusks in recirculating process water systems. Acrolein can enter the aquatic environment by its use as an aquatic herbicide, from industrial discharge, and from the chlorination of organic compounds in drinking water and wastewater treatment. Monitoring studies conducted after field application show that Acrolein can be transported up to 61 miles from the point of application. See *Ambient Aquatic Life Water Quality Criteria for Acrolein*, (CAS Registry Number 107-02-8), (EPA 822-F-09-004), August 2009.

This rulemaking also establishes the aquatic life numeric water quality criteria for Carbaryl pesticide (§ 1104.8, Table 3). The major uses of Carbaryl include insect control on lawns, home gardens, fruit orchards, forage and field crops, ornamentals, forests, turf, shade trees, poultry and pets. Carbaryl is toxic and potentially harmful to aquatic life and can enter water bodies via runoffs. Carbaryl is the second most frequently found insecticide in water with detections in approximately 50 percent of urban streams. See *Aquatic Life Ambient Water Quality Criteria for Carbaryl* (CAS Registry Number 63-25-2), (EPA-820-R-12-007), April 2012.

All other provisions, tables and definitions in the Chapter remain unchanged.

All persons desiring to comment on the proposed amendments to the District of Columbia water quality standards should file comments in writing not later than (30) days after the publication of

this notice in the *D.C. Register*. All comments will be treated as public documents and will be made available for public viewing on the Department’s website at: www.ddoe.dc.gov . When the Department identifies a comment containing copyrighted material, the Department will provide a reference to that material on the website. If a comment is sent by e-mail, the email address will be automatically captured and included as part of the comment that is placed in the public record and made available on the Department’s website. All comments should be labeled “Review of Water Quality Standards” and filed with District Department of the Environment, Water Quality Division, 1200 First Street, N.E., 5th Floor, Washington, DC 20002, Attention: Collin R. Burrell, or by e-mail to DDOE.WQSTR2013@dc.gov . The public may also present its views on the proposed amendments to the water quality standards at a public hearing. Notice of such public hearing will be published in the *D.C. Register*.

Title 21 of the District of Columbia Municipal Regulations, Chapter 11, Water Quality Standards, Section 1104.8 is amended as follows:

1104.8 Unless otherwise stated, the numeric criteria that shall be met to attain and maintain designated uses are as follows in Tables 1 through 3:

TABLE 1 – NUMERIC CRITERIA

Constituent	Criteria for Classes		
	A	B	C
Bacteriological (MPN/100 mL)			
E. coli ¹			
Geometric Mean (Maximum 30 day geometric mean for 5 samples)	126		
Single Sample Value	410		
Physical			
Dissolved Oxygen (mg/L) Instantaneous minimum (Year-round) ²			5.0
February 1 through May 31 ^{3,5}			
7-day mean			6.0
Instantaneous minimum			5.0
June 1 through January 31 ^{3,5}			
30-day mean			5.5
7-day mean			4.0
Instantaneous minimum ⁴			3.2
Temperature (°C)			
Maximum			32.2
Maximum change above ambient			2.8
pH			
Greater than	6.0	6.0	6.0
And less than	8.5	8.5	8.5
Turbidity increase above ambient (NTU)	20	20	20
Secchi Depth ^{3,5} (m)(seasonal segment average)			

April 1 through October 31			0.8
Total dissolved gases (maximum % saturation)			110
Hydrogen Sulfide (maximum $\mu\text{g/L}$)			2.0
Oil & grease (mg/L)			10.0
Biological			
Chlorophyll <i>a</i> ^{3,5} ($\mu\text{g/L}$)(seasonal segment average)			
July 1 through September 30			25

Notes:

¹ The geometric mean criterion shall be used for assessing water quality trends and for permitting. The single sample value criterion shall be used for assessing water quality trends only.

² This criterion applies to nontidal waters.

³ Attainment of the dissolved oxygen, water clarity and chlorophyll *a* water quality criteria that apply to tidal influenced Class C waters will be determined following the guidelines documented in the 2003 United States Environmental Protection Agency publication: Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll *a* for the Chesapeake Bay and its Tidal Tributaries, EPA-903-R-03-002, April 2003, Region III Chesapeake Bay Program Office, Annapolis, Maryland; 2004 Addendum, EPA-903-R-04-005, October 2004; 2007 Addendum, EPA 903-R-07-003 CBP/TRS 285/07, July 2007; 2007 Chlorophyll Criterion Addendum, EPA 903-R-07-005 CBP/TRS 288-07, November 2007; 2008 Addendum, EPA 903-R-08-001 CBP/TRS 290-08, June 2008; and 2010 Criterion Addendum EPA 903-R-10-002 CBP/TRS-301-10, April 2010.

⁴ At temperatures greater than 29°C, in tidally influenced waters, an instantaneous minimum dissolved oxygen concentration of 4.3 mg/L shall apply.

⁵ Shall apply to tidally influenced waters only.

TABLE 2 – NUMERIC CRITERIA

Constituent ¹	Criteria for Classes		
	C		D ²
Trace metals and inorganics in $\mu\text{g/L}$, except where stated otherwise (see Notes below)	CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
Ammonia, total mg N/L	See Note 7	See Note 8	
Antimony, dissolved			640
Arsenic ³ , dissolved	150	340	0.14c
Cadmium ^{4,5} , dissolved	[I] ^{CF}	[I.A] ^{CF}	
Chlorine, total residual	11	19	
Chromium ⁴ , hexavalent, dissolved	11 ^{CF}	16 ^{CF}	
Chromium ^{4,5} , trivalent, dissolved	[II] ^{CF}	[II.A] ^{CF}	
Copper ^{4,5} , dissolved	[III] ^{CF}	[III.A] ^{CF}	
Cyanide, free	5.2	22	140
Iron, dissolved	1000		
Lead ^{4,5} , dissolved	[IV] ^{CF}	[IV.A] ^{CF}	
Mercury ⁴ , total recoverable	0.77	1.4	0.15

Methylmercury (mg/kg, fish tissue residue)			0.3
Nickel ^{4,5} , dissolved	[V] ^{CF}	[V.A] ^{CF}	4600
Selenium, total recoverable	5	20	4200
Silver ^{4,5} , dissolved		[VI] ^{CF}	65000
Thallium, dissolved			0.47
Zinc ^{4,5} , dissolved	[VII] ^{CF}	[VII] ^{CF}	26000

Notes:

¹ For constituents without numerical criteria, standards have not been developed at this time. However, the National Pollutant Discharge Elimination System (NPDES) permitting authority shall address constituents without numerical standards in NPDES permit actions by using the narrative criteria for toxics contained in these water quality standards.

² The Class D Human Health Criteria for metals will be based on Total Recoverable metals.

³ The letter “c” after the Class D Human Health Criteria numeric value means that the criteria is based on carcinogenicity of 10⁻⁶ risk level.

⁴ The superscript “CF” means that the criterion derived from the formula under Note 5 is multiplied by the conversion factor in Table 2A as specified in subsection 1105.10:

TABLE 2A. CONVERSION FACTORS

Constituent	CCC	CMC
Cadmium	1.101672-[(ln hardness)(0.041838)]	1.136672-[(ln hardness)(0.041838)]
Chromium III	0.860	0.316
Chromium VI	0.962	0.982
Copper	0.960	0.960
Lead	1.46203-[(ln hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]
Mercury	0.85	0.85
Nickel	0.997	0.998
Silver	--	0.85
Zinc	0.986	0.978

⁵ The formulas for calculating the criterion for the hardness dependent constituents indicated above are as follows:

[I] The numerical CCC criterion for cadmium in $\mu\text{g/L}$ shall be given by:

$$e^{(0.7409[\ln(\text{hardness})]-4.719)}$$

[I.A] The numerical CMC criterion for cadmium in $\mu\text{g/L}$ shall be given by:

$$e^{(1.0166[\ln(\text{hardness})]-3.924)}$$

[II] The numerical CCC criterion for trivalent chromium in $\mu\text{g/L}$ shall be given by:

$$e^{(0.8190[\ln(\text{hardness})]+0.6848)}$$

[II.A] The numerical CMC criterion for trivalent chromium in $\mu\text{g/L}$ shall be given by:
$$e^{(0.8190[\ln(\text{hardness})]+3.7256)}$$

[III] The numerical CCC criterion for copper in $\mu\text{g/L}$ shall be given by:
$$e^{(0.8545[\ln(\text{hardness})]-1.702)}$$

[III.A] The numerical CMC criterion for copper in $\mu\text{g/L}$ shall be given by:
$$e^{(0.9422[\ln(\text{hardness})]-1.700)}$$

[IV] The numerical CCC criterion for lead in $\mu\text{g/L}$ shall be given by:
$$e^{(1.2730[\ln(\text{hardness})]-4.705)}$$

[IV.A] The numerical CMC criterion for lead in $\mu\text{g/L}$ shall be given by:
$$e^{(1.2730[\ln(\text{hardness})]-1.460)}$$

[V] The numerical CCC criterion for nickel in $\mu\text{g/L}$ shall be given by:
$$e^{(0.8460[\ln(\text{hardness})]+0.0584)}$$

[V.A] The numerical CMC criterion for nickel in $\mu\text{g/L}$ shall be given by:
$$e^{(0.8460[\ln(\text{hardness})]+2.255)}$$

[VI] The numerical CMC criterion for silver in $\mu\text{g/L}$ shall be given by:
$$e^{(1.7200[\ln(\text{hardness})]-6.590)}$$

[VII] The numerical CCC criterion for zinc in $\mu\text{g/L}$ shall be given by:
$$e^{(0.8473[\ln(\text{hardness})]+0.884)}$$

[VII.A] The numerical CMC criterion for zinc in $\mu\text{g/L}$ shall be given by:
$$e^{(0.8473[\ln(\text{hardness})]+0.884)}$$

⁶ Hardness in the equations (I) through (VII.A) in Note 5 above shall be measured as mg/L of Calcium Carbonate (CaCO_3). The minimum hardness allowed for use in those equations shall not be less than 25 mg/L, as CaCO_3 , even if the actual ambient hardness is less than 25 mg/L as CaCO_3 . The maximum hardness value allowed for use in those equations shall not exceed 400 mg/L, as CaCO_3 , even if the actual ambient water hardness is greater than 400 mg/L as CaCO_3 .

⁷ Criterion Continuous Concentration (CCC) for Total Ammonia:

- (a) The CCC criterion for ammonia (in mg N/L) (i) shall be the thirty (30)-day average concentration for total ammonia computed for a design flow specified in subsection 1105.5; and (ii) shall account for the influence of the pH and temperature as shown in Table 2B and Table 2C. The highest four (4)-day average within the thirty (30)-day period shall not exceed 2.5 times the CCC.
- (b) The CCC criterion in **Table 2B** for the period March 1st through June 30th was calculated using the following formula, which shall be used to calculate unlisted values:
$$\text{CCC} = [(0.0577/(1+10^{7.688-\text{pH}})) + (2.487/(1+10^{\text{pH}-7.688}))] \times \text{MIN}(2.85, 1.45 \times 10^{0.028 \times (25-T)})]$$
^T), where MIN indicates the lesser of the two values (2.85, $1.45 \times 10^{0.028 \times (25-T)}$)

separated by a comma.

- (c) The CCC criterion in **Table 2C** for the period July 1st through February 28/29th, was calculated using the following formula, which shall be used to calculate unlisted values:

$$CCC = [(0.0577/(1+10^{7.688-pH})) + (2.487/(1+10^{pH-7.688}))] \times [1.45 \times 10^{0.028 \times (25-MAX(T,7))}]$$
,
 where MAX indicates the greater of the two values (T,7) separated by a comma.

TABLE 2B. TOTAL AMMONIA
(in milligrams of nitrogen per liter)
CCC CRITERION FOR VARIOUS pH AND TEMPERATURES
FOR MARCH 1ST THROUGH JUNE 30TH

pH	Temperature (°C)									
	0	14	16	18	20	22	24	26	28	30
6.50	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.60	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.70	6.44	6.44	5.86	5.15	4.52	3.98	3.42	3.00	2.64	2.32
6.80	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.90	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.00	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.10	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.20	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.30	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.40	4.73	4.73	4.30	3.97	3.49	3.06	2.69	2.37	2.08	1.83
7.50	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.60	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.70	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.80	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.90	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.00	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.10	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.20	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.30	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.40	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.50	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.60	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.70	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.80	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.208
8.90	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.00	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

TABLE 2C. TOTAL AMMONIA
(milligrams of nitrogen per liter) CCC CRITERION FOR VARIOUS pH AND
TEMPERATURES FOR JULY 1ST THROUGH FEBRUARY 28TH/29TH

pH	Temperature (°C)									
	0-7	8	9	10	11	12	13	14	15*	16*
6.50	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
6.60	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.70	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.80	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.90	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.00	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.10	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.20	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.30	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.40	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.50	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.60	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.70	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.80	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.90	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.00	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.10	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.20	2.91	2.73	2.56	2.4	2.25	2.11	1.98	1.85	1.74	1.63
8.30	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.40	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.50	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990
8.60	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
8.70	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
8.80	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
8.90	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
9.00	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

*At 15°C and above, the criterion for July 1st through February 28th/29th is the same as the criterion for March 1st through June 30th.

⁸ Criterion Maximum Concentration (CMC) for Total Ammonia:

- (a) The CMC criterion for total ammonia (in mg N/L) (i) shall be the one (1)-hour average concentration for total ammonia, computed for a design flow specified in subsection 1105.5; and (ii) shall account for the influence of the pH as shown in Table 2D.
- (b) The CMC criterion was calculated using the following formula, which shall be used to calculate unlisted values: $CMC = [(0.411/(1+10^{7.204-pH})) + [58.4/(1+10^{pH-7.204})]]$.

**TABLE 2D. TOTAL AMMONIA (in milligrams of Nitrogen per liter)
CMC CRITERION FOR VARIOUS pH**

pH	CMC	pH	CMC	pH	CMC	pH	CMC
6.50	48.8	7.20	29.5	7.90	10.1	8.60	2.65
6.60	46.8	7.30	26.2	8.00	8.40	8.70	2.20
6.70	44.6	7.40	23.0	8.10	6.95	8.80	1.84
6.80	42.0	7.50	19.9	8.20	5.72	8.90	1.56
6.90	39.1	7.60	17.0	8.30	4.71	9.00	1.32
7.00	36.1	7.70	14.4	8.40	3.88		
7.10	32.8	7.80	12.1	8.50	3.20		

TABLE 3 – ORGANIC COMPOUNDS

Constituent ¹ Organics (µg/L)	CAS Number	Criteria for Classes		
		C		D ²
		CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
Acrolein	107028	10.0 3.0	<u>3.0</u>	9.0
Acrylonitrile	107131	700.0		0.25,c
Aldrin	309002	0.4	3.0	0.000050,c
Benzene	71432	1000		51.0,c
Carbon Tetrachloride	56235	1000		1.6,c
Chlordane	57749	0.0043	2.4	0.00081,c
Chlorinated benzenes (except Di)		25.0		
Chlorobenzene	108907			1600
1,2-Dichlorobenzene	95501	200		1300
1,3-Dichlorobenzene	541731	200		960
1,4-Dichlorobenzene	106467	200		190
Hexachlorobenzene	118741			0.00029,c
Pentachlorobenzene	608935			1.5
1,2,4,5-Tetrachlorobenzene	95943			1.1
1,2,4-Trichlorobenzene	120821			70
Chlorinated ethanes		50		
1,2-Dichloroethane	107062			37.0,c
Hexachloroethane	67721			3.3,c
1,1,2,2-Tetrachloroethane	79345			4.0,c
1,1,2-Trichloroethane	79005			16.0,c
Chlorinated naphthalene				
2-Chloronaphthalene	91587	200		1600
Chlorinated phenols				
2-Chlorophenol	95578	100		150

TABLE 3 – ORGANIC COMPOUNDS

Constituent ¹ Organics (µg/L)	CAS Number	Criteria for Classes		
		C		D ²
		CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
2,4-Dichlorophenol	120832	200		290.0
Pentachlorophenol ³	87865	[I]	[I.A]	3.0,c
2,4,5-Trichlorophenol	95954			3600
2,4,6-Trichlorophenol	88062			2.4,c
Chloroalkyl ethers		1000		
Bis(2-Chloroethyl)Ether	111444			0.53,c
Bis(2-Chloroisopropyl)Ether	108601			65,000
Bis(Chloromethyl)Ether	542881			0.00029
3,3-Dichlorobenzidine	91941	10		0.028,c
Dichloroethylenes		1000		
1,1-Dichloroethylene	75354			7,100,c
1,2-Trans-Dichloroethylene	156605			10,000
1,2-Dichloropropane	78875	2000		15,c
Dichloropropenes		400		
1,3-Dichloropropene	542756			21
Dieldrin	60571	0.056	0.24	0.000054,c
2,4-Dimethylphenol	105679	200		850
2,4-Dinitrotoluene	121142	33		3.4,c
Dioxin (2,3,7,8-TCDD)	1746016			0.0000000051,c (5.1 E-8)
1,2-Diphenylhydrazine	122667	30		0.20,c
Endosulfan		0.056	0.22	89
Alpha-Endosulfan	959988	0.056	0.22	89
Beta-Endosulfan	33213659	0.056	0.22	89
Endosulfan sulfate	1031078			89
Endrin	72208	0.036	0.086	0.060
Endrin aldehyde	7421934			0.30
Ethylbenzene	100414	40		2,100
Halomethanes		1000		
Bromoform	75252			140,c
Chloroform	67663	3000		470.0,c
Chlorodibromomethane	124481			13.0,c
Dichlorobromomethane	75274			17.0,c
Methyl Bromide	74839			1,500
Methylene chloride	75092			590,c
Heptachlor	76448	0.0038	0.52	0.000079,c
Heptachlor epoxide	1024573	0.0038	0.52	0.000039,c

TABLE 3 – ORGANIC COMPOUNDS

Constituent ¹ Organics (µg/L)	CAS Number	Criteria for Classes		
		C		D ²
		CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
Hexachlorobutadiene	87683	10		18.0,c
Hexachlorocyclohexane				
alpha-BHC	319846			0.0049,c
beta-BHC	319857			0.017,c
gamma-BHC (Lindane)	58899	0.08	0.95	1.8,c
Hexachlorocyclopentadiene	77474	0.5		1,100
Isophorone	78591	1000		960,c
Manganese	7439965			100
Methoxychlor	72435	0.03		
Mirex	2385855	0.001		
Naphthalene	91203	600		
Nitrobenzene	98953	1000		690
Nitrophenols		20		
2-Methyl-4,6- Dinitrophenol	534521			280
2,4-Dinitrophenol	51285			5,300
Dinitrophenols	25550587			5,300
Nitrosamines		600		1.24
N-Nitrosodibutylamine	924163			0.22
N-Nitrosodiethylamine	55185			1.24
N-Nitrosodimethylamine	62759			3.0,c
N-Nitrosodi-n-Propylamine	621647			0.51,c
N-Nitrosodiphenylamine	86306			6.0,c
N-Nitrosopyrrolidine	930552			34,c
Nonylphenol	84852153	6.6	28	
Carbamates				
Carbaryl (Sevin)	63252	2.1	2.1	
Organochlorides				
4,4'-DDD	72548	0.001	1.1	0.00031,c
4,4'-DDE	72559	0.001	1.1	0.00022,c
4,4'-DDT	50293	0.001	1.1	0.00022,c
Organophosphates				
Guthion	86500	0.01		
Malathion	121755	0.1		
Parathion	56382	0.013	0.065	
Phenol	108952			860,000
Phthalate esters		100		
Bis(2-Ethylhexyl) Phthalate	117817			2.2,c

TABLE 3 – ORGANIC COMPOUNDS

Constituent ¹ Organics (µg/L)	CAS Number	Criteria for Classes		
		C		D ²
		CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
Butylbenzyl Phthalate	85687			1,900
Diethyl Phthalate	84662			44,000
Dimethyl Phthalate	131113			1,100,000
Di-n-Butyl Phthalate	84742			4,500
Polychlorinated biphenyls ⁴		0.014		0.000064,c
Polynuclear aromatic hydrocarbons				
Acenaphthene	83329	50		990
Acenaphthylene	208968			
Anthracene	120127			40,000
Benzidine	92875	250		0.00020,c
Benzo(a)Anthracene	56553			0.018,c
Benzo(a)Pyrene	50328			0.018,c
Benzo(b)Fluoranthene	205992			0.018,c
Benzo(k)Fluoranthene	207089			0.018,c
Chrysene	218019			0.018,c
Dibenzo(a,h) Anthracene	53703			0.018,c
Fluoranthene	206440	400		140.0
Fluorene	86737			5,300
Indeno(1,2,3-cd) Pyrene	193395			0.018,c
Pyrene	129000			4,000
Tetrachloroethylene	127184	800		3.3,c
Toluene	108883	600		15000
Toxaphene	8001352	0.0002	0.73	0.00028,c
Tributyltin (TBT)	--	0.072	0.46	
Trichloroethylene	79016	1000		30.0,c
Vinyl chloride	75014			2.4,c

Notes:

¹ For constituents without numerical criteria, standards have not been developed at this time. However, permit writers shall address these constituents in NPDES permit actions using the narrative criteria for toxics contained in these water quality standards.

² The letter “c” after the Class D Human Health Criteria numeric value means that the criterion is based on carcinogenicity of 10⁻⁶ risk level.

³ The formulas for calculating the concentrations of substances indicated above are as follows:

[I] The numerical CCC criterion for pentachlorophenol in µg/L shall be given by:

$$e^{(1.005(\text{pH}) - 5.134)}$$

[I.A] The numerical CMC criterion for pentachlorophenol in $\mu\text{g/L}$ shall be given by:
$$e^{(1.005(\text{pH}) - 4.869)}$$

⁴ The polychlorinated biphenyls (PCB) criterion applies to total PCBs (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses.)